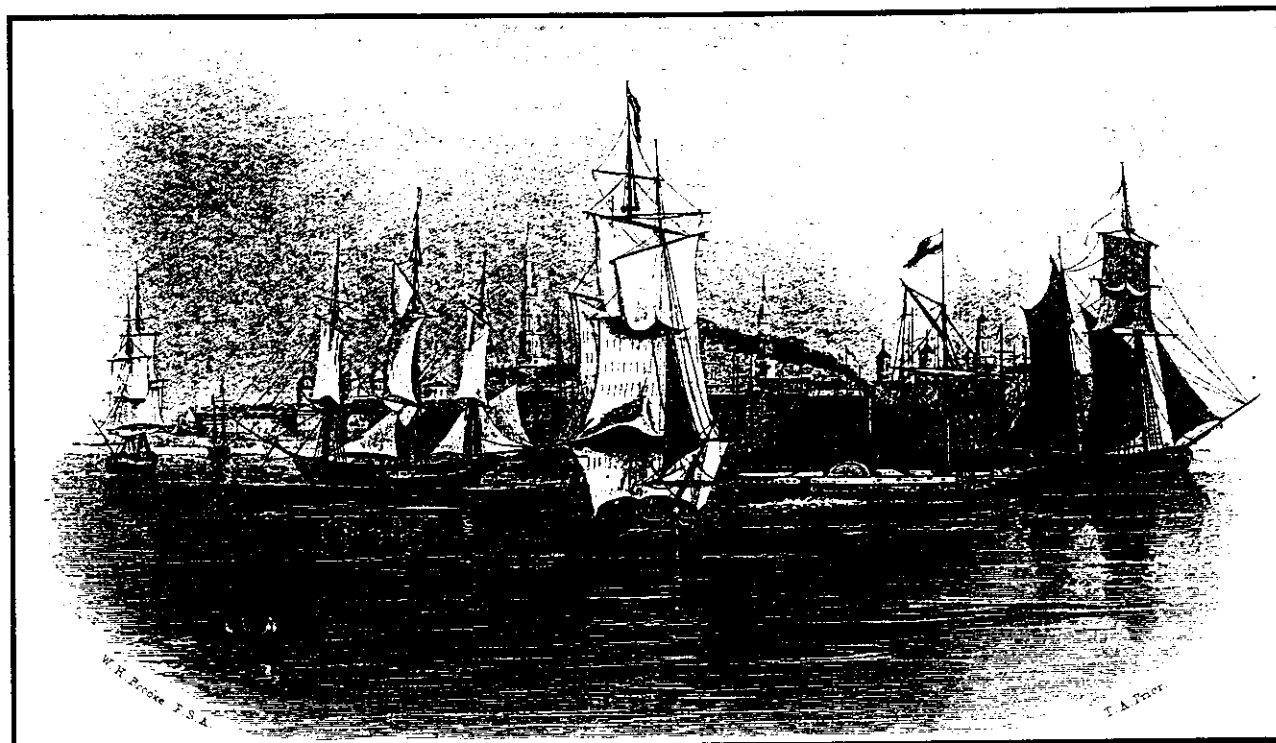


**A Submerged Cultural Resource
Management Document and GIS Database
for the Charleston Harbor Project Study Area,
Charleston, South Carolina**



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Abstract

The submerged cultural resources of the Charleston Harbor area represent an integral part of the fabric of South Carolina's maritime heritage. Those resources also preserve an important physical record of Charleston's development. Properly preserved and recorded, the remains of sunken ships, inundation sites and maritime related structures can provide South Carolinians with insight into their past that is otherwise unavailable in the historical record. That unique and finite archaeological record belongs to all South Carolina citizens. To ensure that South Carolinians receive maximum benefit from the archaeological evidence associated with their maritime heritage, the Charleston Harbor Project and the South Carolina Coastal Council contracted with Tidewater Atlantic Research, Inc., of Washington, North Carolina to develop a management document and GIS database. That plan and database have been designed to aid the protection and preservation of submerged cultural resources within the Charleston Harbor Project study area. Tidewater Atlantic Research has created a resource management document, as well as GIS database for inclusion in the Charleston Harbor Project computer system. The products of this research will provide both an historical and cultural background and readily accessible and updatable database for Charleston Harbor submerged cultural resources. Rather than a definitive system, the management document and database represent points of departure. The Charleston Harbor GIS database can support an active program which can be developed, updated and expanded to serve both present and future resource management activities.

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Introduction

The Charleston Harbor Project is a five year Special Area Management Plan designed to examine the impact of development on the Charleston Harbor estuary system. This system includes the Harbor, Ashley, Cooper, Wando and Stono Rivers, their natural and cultural resources, and the lands that adjoin them. The goals of this project are to enhance the quality of the environment while maintaining the many uses of the waters and natural resources, and to anticipate and act on potential problems before they harm the harbor system. In order to formulate a comprehensive plan, the project has identified a series of priorities which include the development of a submerged cultural resource management document for the Charleston Harbor Project study area (Figure 1).

For over 300 hundred years, Charleston, South Carolina has been an one of the most important seaport and maritime areas in the southeastern United States. As a result, Charleston Harbor and the surrounding river systems have become an important repository of submerged cultural resources. Moreover, these resources preserve an important physical record of American and southern maritime history. In order to preserve the archaeological record associated with Charleston's maritime heritage, submerged archaeological resources must be identified and protected. The basis of effective management includes both a planning document and an understanding of the nature and scope of the resource base.

Tidewater Atlantic Research (TAR) has developed a submerged cultural resource management document and a Geographic Information System (GIS) database for the Charleston Harbor Project study area. The management document provides GIS data regarding known submerged cultural resources and historically documented sites as well as potentially sensitive archaeological areas. GIS provides resource managers with a quick and efficient means of accessing computerized data regarding Charleston's submerged cultural resources. For example, rather than performing manual searches, the GIS system allows users to query computerized site information by selecting an onscreen "site symbol," such as a red triangle, displayed on a digitized USGS 7.5 minute quadrangle map. The user may also query the GIS for information regarding submerged cultural resource sensitivity zones. These zones, developed using a variety of inputs, including historic activity, known submerged archaeological resources, and levels of bottom disturbance activity, provide the user with a more complete picture concerning resource sensitivity within a designated area.

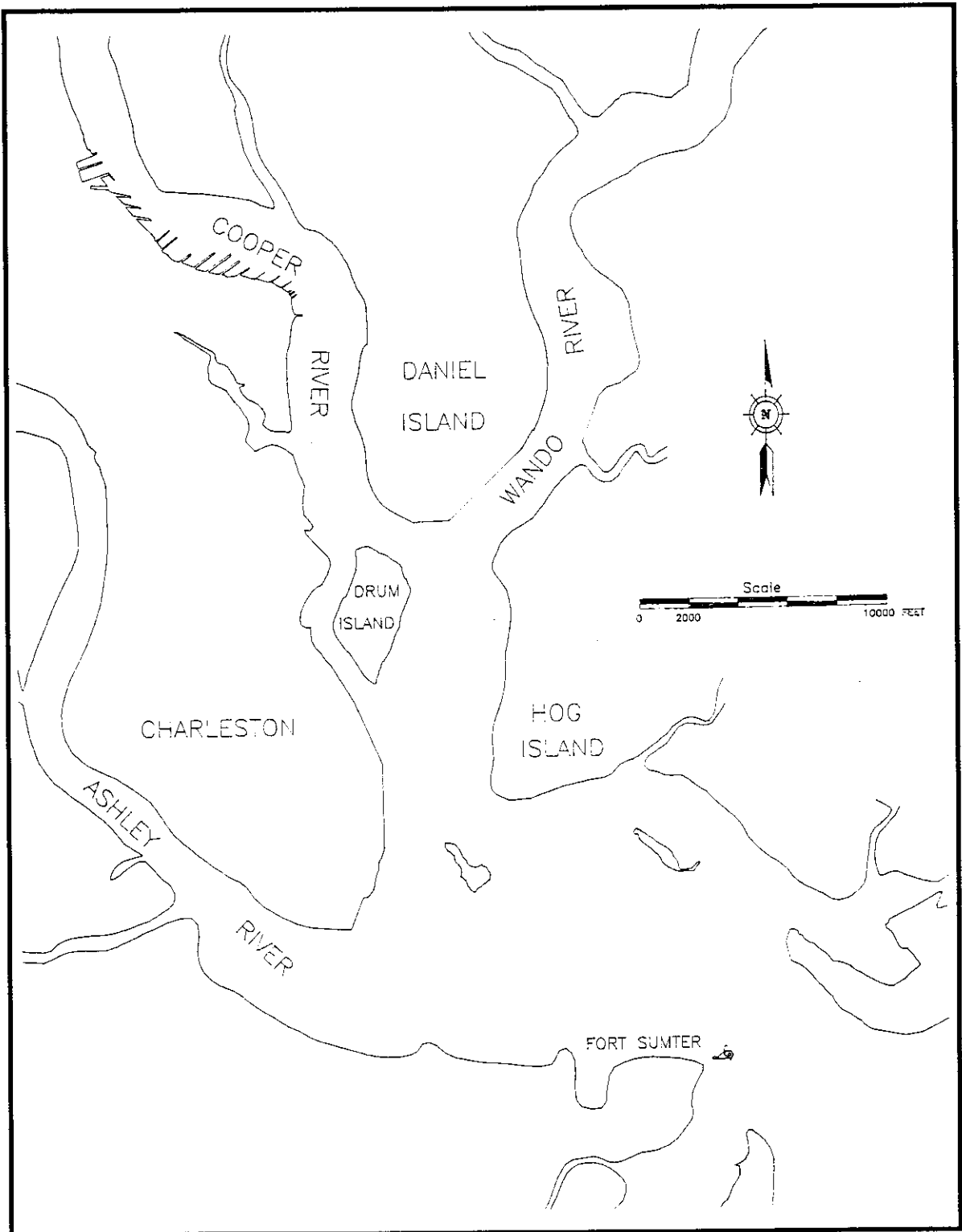


Figure 1. Charleston Project Area Map.

Cultural resources are protected by a variety of regulations and orders designed to guide the activities of all Federal agencies and Federally permitted projects. Specifically, Sections 106 and 110(f) of the National Historic Preservation Act of 1966 as amended require that agencies assess the effects of Federal, federally assisted, or federally licensed projects on properties included in or eligible for inclusion in the National Register of Historic Places. The section 106 process has been designed to address historic preservation priorities. Consequently, GIS facilitates a more effective, project specific 106 Review and Compliance process. In conjunction with GIS development, TAR also produced a resource management document. This document presents an overview of the area's history, the types of archaeological resources and their significance, legislation and regulations, as well as the state and Federal agencies responsible for protection and management.

The South Carolina Institute of Archaeology and Anthropology (SCIAA) is the key agency in ongoing efforts to preserve South Carolina's submerged cultural resources. In fact, the South Carolina Antiquities Act of 1991 designated SCIAA as the custodian for all historic submerged archaeological resources contained within the state's submerged lands. It is hoped that the management document and Charleston Harbor GIS database developed by Tidewater Atlantic Research will prove to be a useful tool to assist both the Charleston Harbor Project and the South Carolina Institute of Archaeology and Anthropology preserve the irreplaceable physical record of South Carolina's maritime heritage.

Project Location_____

The City of Charleston, South Carolina is situated on a narrow peninsula at the confluence of the Ashley and Cooper Rivers. The Charleston Harbor Project study area encompasses the Charleston Harbor drainage basin. It includes the Charleston Harbor, the Ashley and Cooper Rivers, as well as sections of the Stono and Wando Rivers. The submerged cultural resource inventory and management document development project included the inner harbor, the Ashley and the Cooper River basins and portions of the Stono and Wando River basins.

Description of Project Activities_____

Historical Research

The literature and archival investigation was initiated by surveying secondary source materials associated with the historical development of Charleston and eastern South Carolina. The survey focused on documentation of activities such as exploration, colonization, development,

agriculture, industry, trade, shipbuilding, commerce, warfare, transportation, and fishing that would have contributed to the region's submerged archaeological record in the project area. In examining each of these factors, special attention was devoted to activities associated with the Charleston area, including the Ashley, Cooper, Wando, and Stono Rivers. Because TAR has carried out a number of submerged cultural resource related projects in Charleston, much of the historical background, literature and resource specific research had been completed prior to initiating this project. That resulted in a considerable cost savings and permitted maximum attention to be focused on development of the GIS program and database.

The literature and archival investigation, initiated by surveying secondary source materials associated with the historical development of Charleston and the surrounding area, focused on the identification of historic areas of cultural activities, as well as historic vessel losses. Documentation of activities such as colonization, development, agriculture, industry, trade, shipbuilding, commerce, warfare, transportation, and fishing were noted and evaluated for their project relevance.

Preliminary wreck specific information was collected from secondary sources including the *Encyclopedia of American Shipwrecks*, *Merchant Steam Vessels of the United States 1807 - 1868*, *Shipwrecks of the Western Hemisphere*, *Shipwrecks of the Civil War*, *Shipwrecks of South Carolina*, the *Official Records of the Union and Confederate Navies in the War of the Rebellion* and the *National Political Manual* (1868) and other published material. Additional information was generated by a survey of selected South Carolina newspapers, the Wreck Information List of the U.S. Hydrographic Office, the National Oceanic and Atmospheric Administration Snag Log, and maritime records associated with the Port of Charleston. Historic maps and charts preserved in the collections of the South Carolina Archives, the South Carolina Institute of Archaeology and Anthropology, and other South Carolina repositories were also examined.

Relevant manuscript sources of shipwreck data preserved in the South Carolina State Archives, South Caroliniana Library, University of South Carolina Library, South Carolina Department of Archives and History in Columbia, and the South Carolina Historical Society Library, Charleston Public Library, and Charleston Historical Society were surveyed for site specific data associated with Charleston history. The submerged cultural resource site file inventory of the Institute of Archaeology and Anthropology, Columbia, and the Program in Maritime History and Underwater Research at East Carolina University in Greenville, North Carolina, were also reviewed for underwater sites in the study area.

At each repository, the collections were examined for specific references to the study area. The staff of each repository and knowledgeable local researchers were interviewed for source materials. TAR contacted and interviewed the State Historic Preservation Officer (or appropriate staff), State Archaeologist (or appropriate staff), local archaeologists, historians, and other individuals knowledgeable in maritime history and shipwreck research to solicit their assistance in generating wreck data.

TAR personnel examined the site file inventories of the South Carolina Institute of Archaeology and Anthropology (SCIAA) in Columbia, South Carolina. The investigator conferred with Keith Derting at SCIAA in regards to recorded archaeological sites in the area, as well as to discuss the possibilities of encountering evidence of prehistoric or historic cultural activities. A comprehensive examination of the bibliography of archaeological reports compiled by SCIAA was undertaken to ensure that all relevant site surveys were consulted. Consultation with Lee Tippet at the SHPO provided additional information regarding the region's historic development.

Cartographic Research

Cartographic research identified a variety of maps and charts illustrating human activity along the Charleston Harbor Basin. During the survey, maps and charts were systematically examined for data related to historical and archaeological sites. Map indexes were checked for shipwreck and navigational reference data. Tidewater Atlantic Research identified and inspected pertinent historical maps to locate known and potential areas of historic land use. The earliest maps were associated with the settlement of Charleston and included the John Culpepper map of 1671. Maps from the eighteenth century produced information about settlement and navigation. Without question, the most comprehensive and informative maps dated from the nineteenth century, when improved cartography made maps and charts more accurate. Maps produced in the twentieth century provided further insight into the Charleston Harbor Basin and confirmed previous cartographic documents. Features were identified and correlated with sites identified during the field investigations. A synopsis of the cartographic data associated with each map is included in Appendix B.

GIS Development

The use of Geographic Information Systems (GIS) has grown rapidly in the last decade. Primarily, GIS has been a tool for resource managers, planners, and more recently archaeologists. GIS consists of an integrated program that provides a relational, as well as a graphic database. The strength of GIS, as it

relates to archaeology, is its ability to present spatial, temporal, and form data simultaneously (Allen *et. al.* 1990:5). In cultural resource management, GIS has primarily been a tool to facilitate problem solving through the use of integrated, spatially referenced data (Marble 1990:5). In essence, that approach seeks to locate areas of sensitive archaeological sites before development, and consequently preserve or recover the archaeological record while allowing growth and development (Allen *et. al.* 1990:26). Through the use of GIS, the efficiency of the archaeological compliance process can be enhanced. It can decrease the cost of archaeological research as well as preserve a higher percentage of archaeological sites (Allen *et al* 1990:26). In short, GIS allows archaeologists, developers and ultimately the community to benefit.

Due to a dearth of information regarding historic site predictive modeling, particularly for submerged sites, TAR personnel utilized a methodology previously employed by South and Hartley (1980), Hartley (1984), and Ferguson (1986) to locate seventeenth, eighteenth, and nineteenth century terrestrial sites within the Charleston area. By examining historic maps, and hypothesizing that the settlers desired "deep water and high ground," South, Hartley and Ferguson successfully located numerous historic terrestrial sites illustrated on historic maps. Further research has shown that settlement along waterways with sufficient water depth and land elevation continued throughout the nineteenth century.

In order to prepare a sensitivity analysis regarding submerged cultural resources in the Charleston region, TAR personnel implemented a similar framework based on the direct historical approach. That methodology was based on the examination of historic maps to identify activity areas. The "deep water and high ground" concept of settlement patterns was a key factor in isolating high priority resource areas. The TAR submerged cultural resource analysis was not an exact, but rather a general analysis. While the random nature of vessel loss associated with storms and other unpredictable catastrophes, cannot be fully quantified, an examination of the historical record associated with settlement patterns, regional economics and the environment provided insight into areas of high potential sensitivity for submerged cultural resources.

Mapping historic activity areas along the waterways was of primary importance to the project. Since previous research has demonstrated that settlement in the Charleston area developed in close proximity to the waterways, especially along the Cooper, Ashley, Wando, and Stono Rivers. The identification of historic activity areas, such as brickyards, plantations, and landings, aid researchers and resource managers in defining high probability areas for submerged cultural resources. Based on previously documented submerged sites in the Charleston project area, researchers found that submerged archaeological sites may be an extension of, or

associated with, terrestrial sites (Errante 1993:58, 62). Consequently, by mapping areas of historic cultural activity, researchers may begin to observe regional patterns in relation to maritime activities.

TAR personnel also utilized historical records of river and harbor improvements, particularly in relation to U.S. Army Corps of Engineers dredging activities, to identify previously disturbed bottom lands in the project area. Previous submerged cultural resource remote sensing and archaeological site survey data were also included in the GIS database. The combination of previous dredge and survey activity aided the further delineation of sensitivity areas regarding submerged cultural resources.

Using the direct historical approach, historic maps and charts were analyzed for areas of cultural activity, particularly in relation to shipbuilding, shipping, and other activities impacting the scope and nature of the submerged archaeological record. Included in those historic areas were plantations, landings, shipyards, ferry crossings, brickyards, forts and redoubts, as well as shipwrecks. A comparison of historic maps with present day USGS 7.5 topographic maps revealed a striking similarity between physiographic aspects of project area rivers and streams. Landmarks such as river bends and tributaries and written historical records permitted TAR personnel to employ a computer assisted design program (AutoCAD) to identify historic areas on digitized current USGS 7.5 topographic maps. Using a geographical information system program (ArcCAD), those areas were then developed into an ARCINFO compatible GIS layer or coverage.

The historic areas coverage enabled Tidewater personnel to develop a geographic framework for settlement and maritime activities along the project area's waterways. In addition, a database containing all input historic areas was created to provide a name, description, and reference for each individual area. Consequently, the end user may select a graphically displayed symbol for each historical area and obtain the database information.

Previously surveyed areas were also delineated and digitized into AutoCAD. The survey areas were then used to create a GIS "coverage" within ArcCAD. Those survey areas could then be layered on areas of historic and channel maintenance activity. Each survey coverage includes a database with the project location.

Inclusion of the project area's documented submerged archaeological sites was a principal element in GIS development. TAR personnel, therefore, met with Mr. Keith Derting of the South Carolina Institute for Anthropology and Archaeology to obtain data on known submerged sites within the project area. This data is important because it increases the ability of various regulatory

agencies, such as the South Carolina Coastal Council and the South Carolina Institute for Anthropology and Archaeology, to effectively administer South Carolina's Public Notice Review System.

Site locations were then input into the CAD drawings and used to create a GIS coverage for known submerged archaeological sites. A database containing site specific information was also created within ArcCAD and linked to each individual site location within the GIS site coverage. The database connection allows end users to query individual sites for specific information, such as location, type and National Register of Historic Places significance.

The final segment of GIS development pertained to the creation of "sensitivity" zones. By using GIS map overlay techniques, TAR personnel examined the spatial relationship between the previously described coverages. By overlaying the various historic, dredging, and remote sensing survey coverages, one may examine the relationship between areas of historic significance, the level of possible site disturbance, as well as the level of archaeological survey. TAR personnel then assigned a sensitivity rating (1-high, 2-moderate, 3-low) to each zone. The rating was based on the number of submerged archaeological sites, the level of historical activity, the intensity of previous surveys, the level of dredging and channel maintenance activity, and projected population growth within each particular drainage basin. Users may query the GIS for zone specific information, such as sensitivity rating, USGS quad, body of water, previous survey activity, known archaeological sites and historic activity along the waterway.

Charleston Area Prehistoric Background

Investigation of the archaeological evidence associated with prehistoric populations on the South Carolina coastal plain has confirmed that developmental patterns correspond closely with those generalized for the Southern Atlantic states. While the proximity of the Atlantic Ocean contributed to regional variations in those patterns, three major periods of cultural development have been confirmed. These have been identified as the Paleo-Indian, Archaic, and Woodland (Developmental and Climatic) Periods (Coe 1952). These periods of development follow the general pattern originating with hunting and gathering and ultimately terminating in a fishing, hunting, gathering, and horticultural subsistence around the time of European contact in the seventeenth century.

Paleo Period

Chronologically, prehistoric development has been characterized as beginning with the Paleo-Indian Period that began as early as 12,000 B.C., and continued until approximately 8,000 years B.C. (Trinkley and Tippet 1980). This early cultural tradition has been characterized by basely thinned, side-notched projectile points, fluted lanceolate-shaped projectile points, side scrapers, and drills associated with hunting Pleistocene fauna (Trinkley and Tippet 1980). While gathering wild plant foods probably made a significant contribution to Paleo-Indian diets, the emphasis was on hunting (Griffin 1952). As the Paleo-Indian population lacked the technology to store food, their existence was closely related to available resources. However, by the Middle Paleo Period, environmental change may have dictated modifications to hunting traditions due to the elimination of Pleistocene megafauna. This change would have required a more diverse subsistence, including utilization of both vegetation and aquatic resources (Davidson 1982:15-16). These changes perhaps characterized the transition to the adaptive pattern of the Archaic Period.

Archaic Period

The Archaic Period began around 8,000 years B.C. and lasted until approximately 2,000 years B.C. (Trinkley and Tippet 1980). It is associated with the Atlantic climatic episode and was marked by the dramatic environmental change that characterizes the appearance of the Holocene in the Middle Atlantic area. The pre-Boreal conditions that existed during the late Paleo-Indian Period were transformed into a Boreal environment, producing vegetation similar to that surviving in the region at present. During that time, prehistoric inhabitants of the area relied less on hunting and made more extensive use of plant food sources. Adaptations to the Holocene environment are characterized in lithic material by bifurcate base projectile points, although a variety of stemmed points have been recognized as diagnostic of Archaic cultural traditions surviving as late as 1000 B.C. in many parts of the Middle Atlantic (Kraft 1977). Significant changes in climate, environment, and the lifeways of the prehistoric population are apparent in the archaeological record by 2,000 B.C., and that date has been accepted as indicative of the end of the Archaic.

Woodland Period

Fiber-tempered ceramics termed Stallingsware (Fairbanks 1942) began to appear in South Carolina at about 2,500 B.C. (Stoltman 1966), indicating the beginning of the Woodland Period. Unlike the mobile lifestyles of the Paleo and Archaic, Woodland lifestyles, as a response to the onset of the mid-post-

glacial xerothermic, were more sedentary and focused on high-order water courses or especially productive estuaries. Larger populations became more stratified and are characterized by Stallings and Thom's Creek pottery, as well as cord-marked, fabric-marked, and net-impressed ceramics. These styles link South Carolina pottery with contemporary styles to the north (Trinkley and Tippet 1980).

The Climatic Phase of the Woodland Period is marked by the presence of temple mound complexes and complicated stamp pottery which show evidence of influence from the Savannah and Irene cultures in Georgia and the Pee Dee culture in North Carolina (Ferguson 1971). The Woodland Period can be identified by several distinctive characteristics. One of the most notable was the development of estuarine and riverine adaptations that were stable and intensive enough to produce large macro-band base camp sites in the zone of freshwater/saltwater interface along the major drainages. Population growth was also reflected in single site locations that produced sites much larger than Archaic macro-band camps. In addition, Woodland inhabitants utilized foraging and collecting in areas less productive than the estuarine and riverine settings. Participation in large scale exchange networks has also been identified as characteristic of the Woodland period, along with occasional participation in complex mortuary ceremonies, such as cemeteries and rich grave offerings.

Proto-Historic Period

The Proto-Historic Period begins with the first European contact, around 1650, and ends with the establishment of an English settlement at Charles Towne in 1670. The Proto-Historic Period was marked by occasional contact between the Coastal Plain tribes and Europeans. Although a lack of research data hinders the definition of Proto-Historic cultural systems, ethnographic accounts recorded by Hilton (Cheves 1897) and Lawson (Harris 1952) provide insights into their lifeways and customs.

Charleston Area Historic Background_____

Colonial Period

The establishment of Charles Towne in 1670, on the west bank of the Ashley River, marks the beginning of English settlement in South Carolina (Figure 2). Due to the strategic vulnerability of the Ashley River site, the colonists moved in 1680 to Oyster Point, located at the confluence of the Ashley and Cooper Rivers (Waring 1970:22-24). The new site benefited from increased

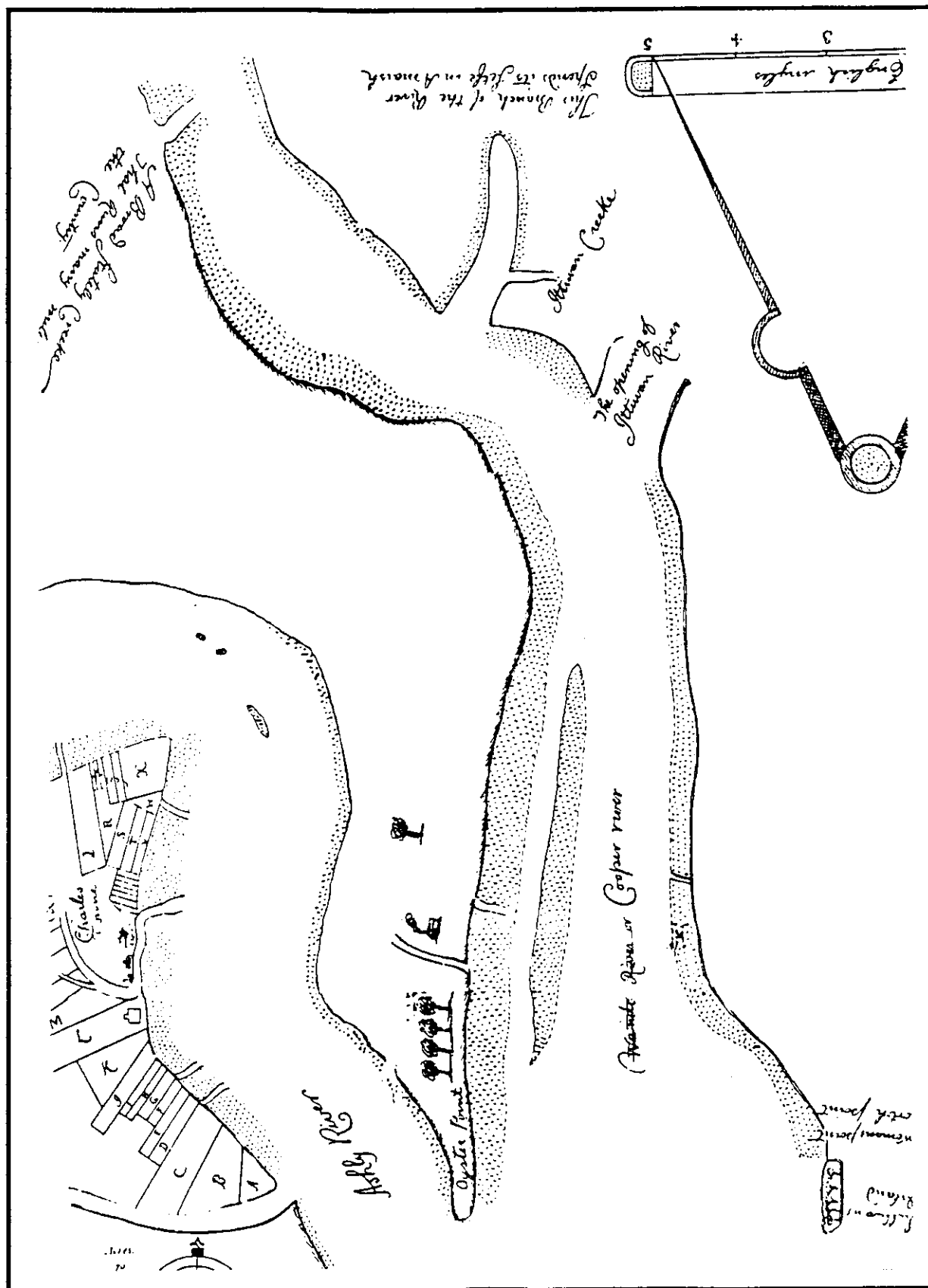


Figure 2. John Culpeper Map of Charles Towne, 1671.

strategic security, being an area easily defended by land and sea, as well as an increased commercial position (Sellers 1970:5). In 1680 one observer noted that:

The situation of this Town is so convenient for public Commerce that it rather seems to be the design of some skillful artist than the accidental position of nature (Zierdan *et. al.* 1986:2-14).

The harbor, although somewhat shallow, provided a good anchorage and easy access. In addition, the rivers and their tributaries allowed the development of regional commercial activities. This included activities within South Carolina, as well as North Carolina. The limited navigability of most North Carolina waterways, combined with their northwest flow, made it easier to ship out of South Carolina ports, such as Charleston, than North Carolina ports (Zierdan *et al* 1986:2-15).

By 1695, colonists had settled outlying areas, usually along waterways, such as James and Edisto Islands, and the area surrounding Hobcaw and Shem Creek (Figure 3). The colony's method of land acquisition, based on the land grant and headright system, proved ideal for the formation of large plantations. By 1700, colonists began to develop plantations and settlements along the Ashley, Edisto, and Santee Rivers (Zierdan *et al* 1986:2-15). Although the lure of commercial gain fueled small-scale expansion, the continual threat of Native-American and Spanish attacks limited extensive settlements outside a thirty mile radius of Charleston (Hartley 1984:10).

Although the colony's early agricultural ventures focused on subsistence, the proprietors continually encouraged the development of a profitable export staple (Calhoun 1982:33). Initially, cattle, other livestock and skins from the burgeoning Indian trade, were the colony's primary exports (Calhoun 1982:33). Charleston's extensive fur trade with the Native-American inhabitants resulted in the exportation of more than 60,000 deer skins in 1699 (Rhett 1940:23). Consequently, Charleston became the entrepot of the southern Native-American country that lay several hundred miles to the west and southwest (Sellers 1970:25).

During the first quarter of the eighteenth century, the colonists also experimented with the development of rice as a commercial crop. Once they determined that the crop was ideally suited to the area's low-lying swamplands, rice replaced skins as the leading export in Charleston's economy (Sellers 1970:6-7; 150). By 1729, rice and indigo had become the major cash crops of a rapidly developing plantation system (Orvin 1961).

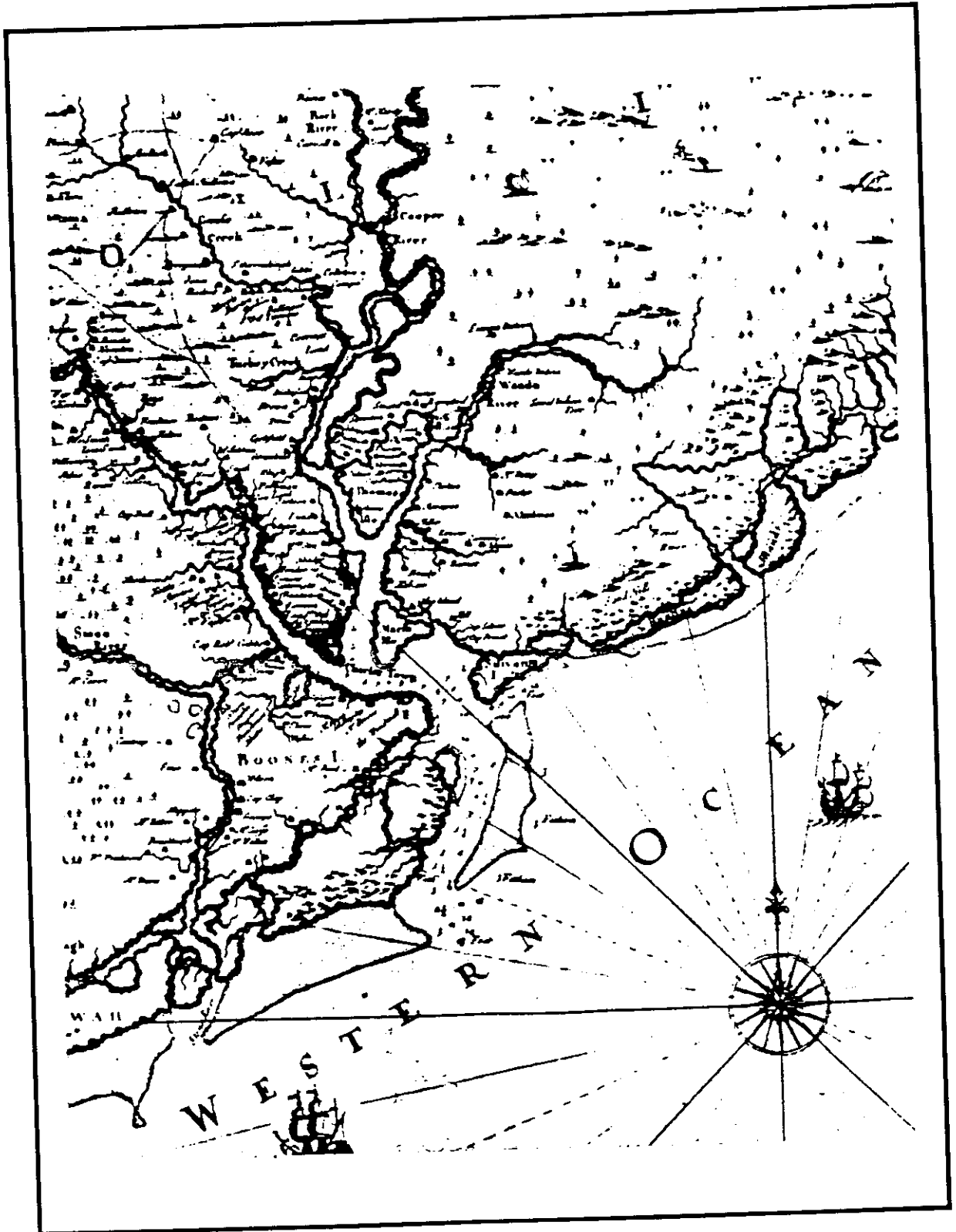


Figure 3. Thorton/Morden Map of South Carolina, Ca. 1695.

During the 1730s, Charleston, with its growing economic base, evolved from a frontier settlement into a regional commercial center and port. The colony's inland expansion, combined with its profitable cultivation of rice and indigo, brought a measure of financial stability to Charleston. Charleston merchants and factors reinvested in the economy, thereby accelerating economic progress (Calhoun 1982:34). Charleston's economic growth continued throughout the eighteenth century. Maritime activities also developed at a rapid pace. During the 1730s, Charleston merchants loaded 220 ships annually for Europe, in competition with northern commercial centers, such as New York, loading 196 ships in 1732 and Philadelphia, loading 173 in 1733 (Sellers 1970:11).

Charleston became the trade center for the prosperous tidewater region. Charleston merchants carried on back-country trade with inhabitants of western North and South Carolina and coastal trade with the tidewater section of North Carolina, particularly the Cape Fear area. Charleston thus became the commercial capital of an immense region. By the middle of the eighteenth century, Charleston planters, in pursuit of large scale staple farming, utilized vast numbers of African slaves. The lowcountry along the sea coast consisted of sand, pine barrens, and swamps. Here, rice and indigo were cultivated by slave labor on plantations that ranged in size from 3,000 to 40,000 acres. These products were then transported, usually by water, to Charleston and exported directly to Europe. In 1751 Governor Glen described shipping on the Cooper River. Glen stated, the "...Cooper River appears sometimes a kind of floating market, and we have numbers of Canoes, Boats, and Pettygues that ply incessantly, bringing down the Country Produce to Town and returning with such Necessarys as are wanted by the Planters" (Sellers 1970:5).

The western settlers of North Carolina and Georgia also shipped produce to Charleston, rather than to Wilmington or Savannah (Weir 1983:49-51). Charleston's growth as a regional market also increased the port's significance and development. In 1755, approximately 300 ships of various types and sizes entered the port of Charleston annually. By 1760, 245 vessels entered the port; in 1765, that number increased to 450 and remained relatively constant through 1770. In that year Lieutenant Governor Bull wrote to the Earl of Hillsborough that Carolina's commerce kept "equal pace with its agriculture, that its trade extended to all parts of the world consistent with the navigation acts, and that now near 500 sails of vessels" were employed in the export of produce and import supplies and manufactured goods (Sellers 1970:11-12).

The British acquisition of Florida in 1763 opened a new trade territory for the Charleston District, as well as new investment opportunities for Charleston merchants and planters. The lack of a good harbor resulted in the commerce of eastern Florida being routed through Charleston. In addition, vessels regularly sailed between Charleston and Pensacola, located on Florida's west

coast. These commercial activities compensated for Carolina's declining fur trade, caused by a depletion of animal resources in the colony's piedmont region (Sellers 1970:44-45).

Like most agricultural districts, Charleston's trade was seasonal. Charleston's commercial activities were highest from January through May, when rice was in greatest demand in Holland, Germany, and Flanders. Also during those months cargoes of African slaves were arriving for planters who were beginning new crops. From June to autumn business was relatively slow. The South Carolina Gazette of 10 September 1763, reported "44 sail in the harbor - 17 ships, 1 Billander, 6 schooners, and 10 sloops," ..."the greatest number ever known to be here at this time of year."

Water travel provided planters with the most efficient means of transportation. The region's rivers and creeks became floating highways with a wide variety of vessel types. Planters utilized vessels such as sloops and schooners for coastal transportation, and smaller boats, such as canoes and flats for inland riverine transportation. The South Carolina Gazette of 27 June 1768, noted:

It has been computed that there are (built and owned in this province) upward of 130 Boats and Schooners, three-fourths of them deck'd carrying from 10 to 50 tons at 4 barrels of rice to the ton, employed in bringing the Country Produce to this market,...And their burthen together is reckoned 3,500 tons.

Vessels employed in the Charleston trade represented three classes: inland, coastal, and ocean-going. Interior trade was carried out by inland boats of a few tons burden, as large vessels risked being grounded on the shoals in the rivers. These vessels included canoes, periaugers, and flats. The largest of the inland boats had trunk masts that had to be folded when they passed beneath bridges. These vessels provided the colonists with an effective form of communication and transportation. Products from plantations in the maritime parts of the province were transported to market in vessels with standing masts, decked to protect the produce from the weather. These "decked periaugers" were essentially coasters, some of them as much as 50 tons burden. Similar vessels, some as much as 70 tons burden, carried on the coastal trade (Rogers 1969:3-5; Sellers 1970:63-64).

Sloops and schooners probably comprised the largest portion of coasting vessels. These vessels were single and double masted respectively, and designed to operate in a variety of environments. Due to the shallow inlets and rivers of the lowcountry, shipbuilders produced shallow draft sloops and schooners. A vessel's carrying capacity and sailing qualities in variable operating conditions were critical features to the planters. Much of the rice and indigo cultivated on plantations were transported to Charleston in

schooners. An example of plantation schooner usage is provided by eighteenth century merchant Henry Laurens, owner of two plantations. Laurens employed two schooners. One schooner, the *Baker*, operated from Laurens' Mepkin plantation on the Cooper, while the other, the *Wambaw*, served his Wambaw plantation on the Santee River (Harris *et. al.* 1993:16).

Ocean-going vessels, usually employed in the European trade, ranged from 200 to 500 tons, although the latter was considered a very large ship. These vessels included ships, snows, brigantines, and larger schooners and sloops. Most of those vessels transported from 1,000 to 1,200 barrels of rice, or 250 to 300 tons. A visitor to the port during the height of the 1773 shipping season noted, "The number of shipping far surpasses all I had seen in Boston. I was told there was not so many as common at this season, though about 350 sail lay off the town..." (Quincy 1773:424-481). Foreign vessels often stayed in Charleston from one to three months, during which time the cargo was unloaded and the vessel overhauled for the return voyage (Rogers 1969:7-8).

Because the navigable waters of the Ashley and Cooper Rivers extend so far inland, some coastal traders, and even ocean vessels, traveled well into the heart of the plantation country. For example, an English traveler in 1774 described Dorchester as "a pretty good sized town, upon Ashley River about 20 miles above Charles Town, and navigable all the way up to it...for vessels of above 100 tons burthen" (Mathew 1992:97n). Approximately five or six miles above the town of Dorchester, Bacon's Bridge represented the "head of sloop navigation" on the Ashley River (Mathew 1992:95-96). The Cooper River provided even greater inland access, as its navigable headwaters, near Biggin's Creek, were some 40 miles from Charleston (Mathew 1992:68).

The lengthy inland navigation of the Ashley and Cooper Rivers presented several advantages. For one, vessels could sail up the river as early as March and wait for the next crop of rice, due the following October or November. A common anchorage was near the town of Childsburry, approximately 37 miles up stream on the east bank of the Cooper River's western branch (Smith 1913:198-203; Edgar 1972:117,407). In June 1744, Charleston merchant Robert Pringle reported that despite it being so early in the year "Eight or Ten Sail....Lye [at Childsburry] till next crop." In addition, anchoring in the Cooper River was a useful technique for vessel maintenance. The fresh inland waters of the river rendered shipping a partial haven from the ship worm, *teredo navalis*, and the threat of hurricanes (Edgar 1972).

During the mid-1700s Charleston's primary plantation products and exports were rice, indigo, naval stores, and to a lesser degree, deerskins. Indigo was a particularly valuable commodity. In the years 1774 and 1775 Charleston exported more than a million pounds of indigo (South Carolina Gazette 26 December 1774 and 20 February 1775). A 1767 edition of the *South Carolina Gazette* published the following description of a vessel transporting indigo:

The Ship *Beaufain*, Capt. Daniel Curling, cleared since our last for London, has on board no less than 394 casks containing 141,009 pounds weight of net indigo (Supposed about one third of the crop) besides 751 barrels of rice, 14 hogsheads and six bundles of dress'd deer skins, 17,779 pounds of hemp, 32 Barrels of Turpentine, 5 boxes of seeds, and other articles, and it is reckoned the richest ship that has sailed from this port...(Sellers 1970:164).

Rice was another important staple crop. During 1769 Charleston exported to Europe 123,317 barrels of rice. Of these, Portugal received 24,264 and Spain 5,046. This seems to indicate that Southern Europe was a significant consumer of Carolina rice in that year (MacPherson 1805). In the Americas, the largest customers for Carolina rice were the West Indies, which sometimes consumed more than all of Southern Europe. Small quantities were purchased by New York, Pennsylvania, and Rhode Island, which were involved in the rum and slave trade between the West Indies, Africa, and America. Ships from these colonies frequently landed at Charleston to sell slaves and rum, as well as to acquire rice.

While Charleston continued to export indigo, rice, and deer skins, hundreds of other items were imported into Charleston. During the 1760s Charleston's newspaper carried the advertisements of merchant James McCall, who imported items from Bristol. These included saws, iron pots, bullets, gunpowder, window glass, nails, canvas, drugs, bird fountains, hearth tiles, bridles and whips, bowls, decanters, tea and coffee pots, candlesticks, ale, Gloucestershire cheese, candy, gloves, shoes, "handsome flowered silks," "silk umbrelloes," ribbons, India bordered chintz, and "a great variety of useful articles" (Fraser 1976:11).

Not all areas of the Charleston region were equally suited for indigo and rice. While the Cooper River drainage basin supported these cash crops, the Wando River basin, which extends twenty miles northeast of Charleston, was too wet, poorly drained, and saline to support large scale rice cultivation. Similar conditions also exist along the western and northern shorelines of St. Thomas and St. Denis parishes in Berkeley County (Wayne 1993:81).

Although unsuitable for rice and later cotton, the Wando River basin possessed an abundance of brick making resources, including suitable clay, sand for temper, fuel for kilns, and labor, specifically plantation slaves. In addition, the Wando River provided excellent access to Charleston markets, a crucial element for developing the region's brick making industry (Wayne 1993:81). A 1747 *South Carolina Gazette* advertisement illustrates the available brick making resources along the Wando River:

To be sold...the Plantation where the Subscriber now lives, convenient to a good Landing on Wando River...also great convenience for Brick Works, there being excellent Clay close to the Landing with Plenty of Wood at Hand for burning (Stine *et. al.* 1993:81)..

Other areas of economic activity within the Wando basin focused on produce and livestock, as well as firewood, timber, and naval stores (Wayne 1993:81, Scardaville 1985:35-42). Whether rice, bricks, or lumber, colonial planters and merchants depended heavily upon the waterways, their primary transportation network. Without access to the waterways, and the upriver raw materials, Charleston's economy would have stagnated.

Revolutionary Period

Military and political activities associated with the American Revolution interrupted Charleston's commercial development. The initial effect was felt late in 1769, following the colonial adoption of a general boycott of British goods. By December of that year, imports had declined by more than 50 percent and the usual bustling harbor of Charleston was virtually empty (Fraser 1976:45). Although the boycott was repealed approximately one year later, the ensuing political and military upheaval produced long-term effects for the port of Charleston and the surrounding area.

From the war's outset, naval and commercial shipping in the Charleston area were jeopardized. In the fall of 1775 the Provincial Congress, fearful that British warships in the area might attempt an assault on Charleston, ordered a blockade of the main channels to the harbor. A second measure taken in an attempt to help defend Charleston was the creation of the South Carolina Navy. By early 1776 the schooner *Defence*, the brig *Comet*, and the ship *Prosper* had been converted and armed to patrol the waters in and around Charleston (Clark 1968 III:1310 and Naval Documents of American Revolution Vol. III 1968: 133, 177 and 623). Shortly thereafter, the naval situation was intensified with the arrival of a British force under the command of General Sir Henry Clinton and Sir Peter Parker. In spite of the impressive nature of the British fleet, efforts to capture the city failed primarily due to the complexities of navigating in the shallow inlets and skillful American defense of the fortifications on Sullivans Island. "Thus", a British officer wrote, "was the Invincible British Navy defeated by a Battery which was supposed would not have stood one Broadside" (Fraser 1976:91-92).

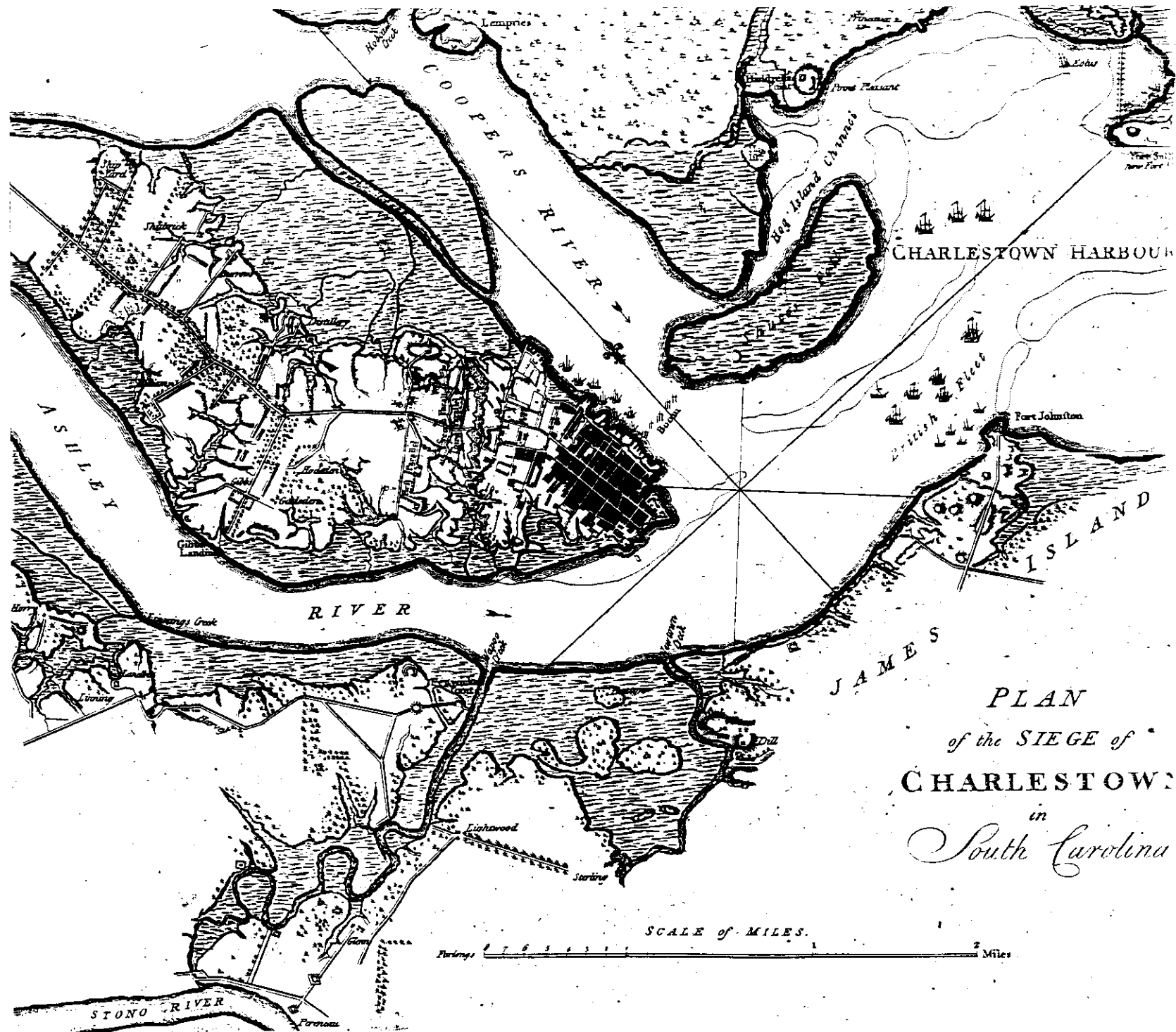
In December 1779, commanders of the Continental forces received reports that the British were preparing another offensive against Charleston. American efforts to strengthen the existing fortifications on Sullivans Island,

Haddrells Point, and James Island, and to construct a line of trenches, batteries, and oyster shell and mortar redoubts linking the swamps and rivers to the east and west of the peninsula were justified on 14 February 1780, when a British fleet moved into the North Edisto River and landed 6,000 troops at what is now Seabrook Island, approximately 20 miles from Charleston.

In early March, Fort Johnson on the northeast end of James Island fell to the British. That left them in command of the southern approach to Charleston Harbor and the west bank of the Ashley River (Weir 1983:331-332; Fraser 1976:119-121). The arrival of 700 North Carolina Continental troops in the city gave brief hope to the residents of Charleston but General Lincoln realized that the four armed frigates and the barges in Charleston harbor were no match for the British warships that lay off the harbor bar. He, therefore, ordered eleven vessels, including the four armed frigates, scuttled near the mouth of the Cooper River with a boom strung to connect the masts of the submerged ships (Figure 4). It was not until 20 March that the British warships crossed the bar into the harbor (Middleton Papers, Caroliniana Manuscript Collection). By 3 April 1780, Clinton's troops had moved across the Ashley and established a two mile long line of trenches and redoubts. The British then occupied positions connecting the Ashley and Cooper Rivers.

During the next several days the British moved heavy artillery closer to Charleston. British guns began a bombardment of the town on the morning of 13 April, leaving General Lincoln to consider an evacuation of the town. However, by the next day all territory east of the Cooper River was in the hands of the British, and Charleston was completely encircled. The British began their final bombardment on the evening of 9 May. The assault continued throughout the night and into the next day. As the British prepared for an assault on the town on the afternoon of 11 May, a white flag was hoisted by the Continental forces. The next afternoon, General Lincoln surrendered approximately 5,500 troops, their weapons, ammunition, and stores. The last open seaport had fallen to the British. Charleston remained under British control for the next two years.

At the beginning of the revolution South Carolina lacked the necessary ships for defense against the British. A number of ships were either purchased or seized to serve in the South Carolina Navy. It was soon apparent, however, that the state required its own shipyard, to facilitate the maintenance and construction of naval vessels. Prior to the Revolution, Robert Cochran of Charleston established a shipyard on the south side of Shipyard Creek, just north of Belvedere Plantation. In 1777, the South Carolina State Navy, in search of a yard to maintain and repair vessels, leased Cochran's shipyard. However, the yard's small size combined with the temptations offered to workmen by the nearby town soon led the Navy to rethink its plans. By 1778,



the South Carolina Navy had relocated its shipbuilding facilities to Paul Pritchard's shipyard on Hobcaw Creek. The navy yard remained in operation until the British occupation of Charleston in 1780. In 1798, naval shipbuilding returned to Cochran's shipyard when a committee of powerful Charleston citizens resolved to contribute a warship to the fast approaching war with France. The following year the 28 gun frigate *John Adams* was launched into the still waters of Shipyard Creek and was soon thereafter presented to the United States government (McNeil 1985:10). After this, however, naval shipbuilding in the Charleston area suffered a prolonged hiatus.

During the war a number of vessels were lost or abandoned within the confines of Charleston Harbor. For example, in 1775, four hulks were scuttled in Hog Island channel and in 1780, eleven more were scuttled in the mouth of the Cooper River, all of which were sunk as obstructions to navigation for military purposes. In addition to the scuttled vessels, two British warships were lost. The first, H.M.S. *Actaeon* grounded off Fort Moultrie in July, 1776, and could not be refloated. Five years later H.M.S. *Thetis* was also lost as the British abandoned Charleston. During the British occupation of Charleston the vessel *Friendship* grounded on the Middle Ground and broke up in 1780, and the privateer *Lord North* and the vessel *Jamaica* sank inside the harbor in 1781.

Ante-bellum Period

Following the British withdrawal in 1782, Charleston's commercial activity increased with the introduction of a new cash crop. Moreover, the withdrawal of the British indigo bounty forced planters to cultivate cotton as the new staple crop (Zierdan *et. al.* 1986:2-28). Experimentation led planters to select the green seed (short staple) and the black seed (long staple) for use in South Carolina (Zierdan *et. al.* 1986:2-29). The invention of the cotton gin, in 1793, enabled planters to develop large scale cotton production, both on the coast and in the piedmont. Consequently, an increasing number of planters devoted their land to cotton. Between 1 October 1799 and 30 September 1800, South Carolina exported more than 6,000,000 pounds of cotton, an increase of approximately 6000 percent over the same period a decade earlier (Petit 1976 I:170).

Large scale cotton production ensured the survival and expansion of the Southern plantation system, particularly surrounding Charleston. Within the plantation economic system, slave labor became a crucial element. This resultant demand for plantation slaves led South Carolina to reopen the African slave trade in 1803. A dependence on slave labor eventually limited South Carolina's agricultural and industrial innovation (Zierdan *et. al.* 1986:2-30).